DOINGWHATWORKS

SAMPLE MATERIAL

Frank's Fresh Farm Produce

Madison Elementary School, Washington

Topic: National Mathematics Panel: Critical Foundations for Algebra

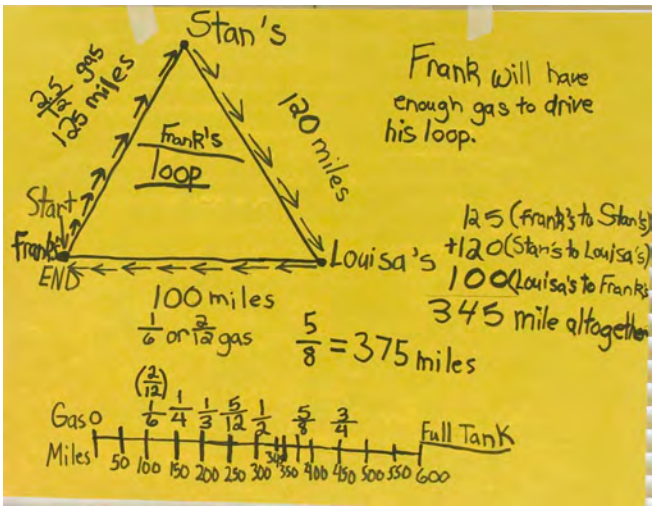
Practice: Mathematics Preparation for Algebra

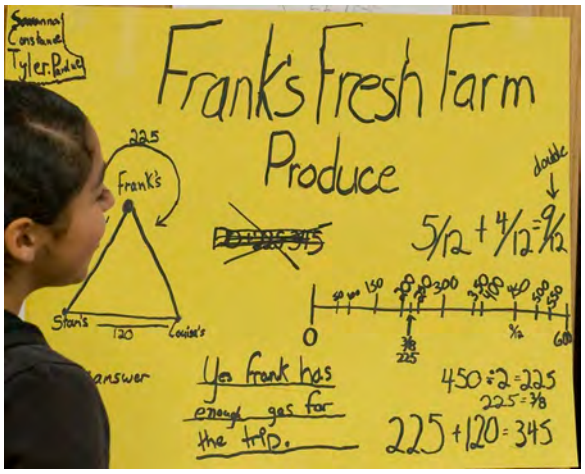
The first page shows the problem that student groups were assigned to work on using a double number line. The photos on the second page show posters of the different solutions that student groups developed.

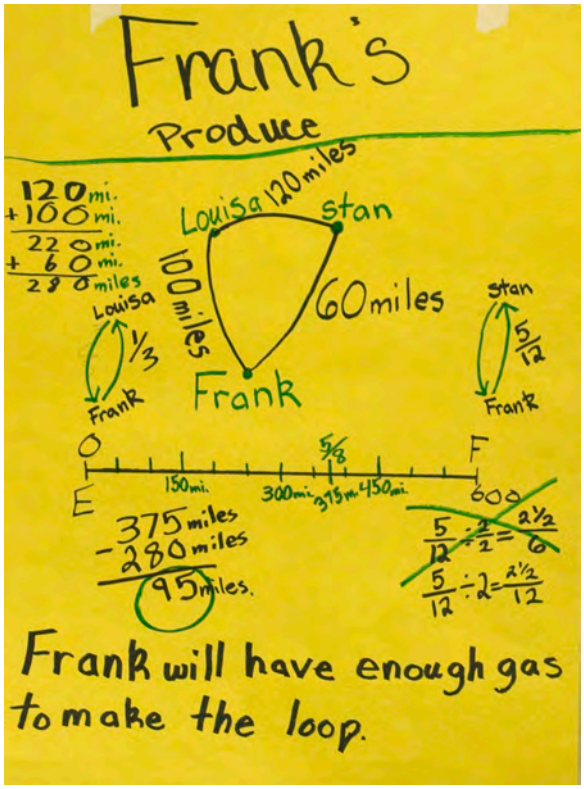
Frank runs a business called Frank's Fresh Farm Produce. Once a week he drives north of the city to farms where he buys the best possible produce for his customers. Frank can travel 600 miles on a full tank of gas. His truck has a fancy, accurate fuel gauge.

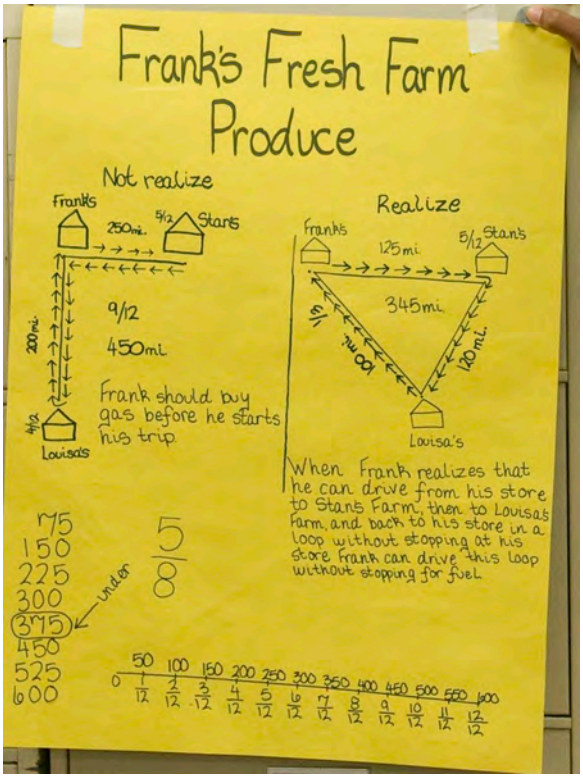
Usually Frank has time to visit only one farm on each trip, but this week he decides to visit both Stan's and Louisa's farms. When Frank drives from his store to Stan's farm and back, he knows he uses 5/12 of a tank of gas. When he drives to Louisa's farm and back, he uses 1/3 of a tank of gas. From an area map, he learns that there is a road from Stan's farm to Louisa's farm that is 120 miles long. He realizes that he can drive from his store to Stan's farm, then to Louisa's farm, and then back to his store in one loop.

Frank can tell by looking at his fuel gauge that he has 5/8 of a tank of gas. Can he drive this loop without having to stop for fuel? Or, should he buy gas before he starts his trip?


Stan's
Frank will have enough gas to drive his loop.
Frank's loop
120 miles
Start
Frank's
END
Louisa's
125 (Frank's to Stan's)
+120 (Stan's to Louisa's)
100 (Louisa's to Frank's)
345 mile altogether
100 miles
1/6 or 2/12 gas
5/8 = 375 miles
Gas
Miles
Full Tank
50 100 150 200 250 300 350 400 450 500 550 600


Frank's Fresh Farm Produce
Frank's
Stan's
Louisa's
120
225
Yes Frank has enough gas for the trip.
5/12 + 4/12 = 9/12
double
450 ÷ 2 = 225
225 + 120 = 345


Frank's
Produce
120 mi.
+100 mi.
220 mi.
+ 60 mi.
280 miles
Louisa
120 miles
stan
100 miles
60 miles
Frank
1/3
5/12
0
F
E
150 mi.
300 mi.
375 mi.
450 mi.
600
5/8
375 miles
-280 miles
95 miles.
Frank will have enough gas to make the loop.


Frank's Fresh Farm Produce
Not realize
Frank's
Stan's
250mi.
5/12
9/12
450mi.
200mi.
4/12
Louisa's
Frank should buy gas before he starts his trip.
Realize
125mi.
345mi.
120mi.
When Frank realizes that he can drive from his store to Stan's Farm, then to Louisa's Farm, and back to his store in a loop without stopping at his store Frank can drive this loop without stopping for fuel.
175
150
225
300
375
450
525
600
under
5/8
50 100 150 200 250 300 350 400 450 500 550 600
1/12 2/12 3/12 4/12 5/12 6/12 7/12 8/12 9/12 10/12 11/12 12/12